

**Encoder Utilizing a Reflective Cylindrical Surface****ABSTRACT**

5           An encoder for measuring the position of a rotating shaft is disclosed. The encoder includes a drum having an encoding track thereon and a detector module having a light source and a photodetector. The drum includes a cylindrical surface characterized by an axis, the drum having a surface with a normal perpendicular to the axis. The encoding track includes a plurality of alternating reflective and non-reflective stripes arranged on the cylindrical  
10 surface. The first light source illuminates the stripes at an opaque angle relative to the normal. The first photodetector is positioned to receive light from the light source that is reflected from the reflective stripes when the drum moves relative to the photodetector. In one embodiment, the drum rotates about the axis when the shaft rotates. The encoding track can be either on the inside or outside of the drum.